

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau

WIPO

(43) International publication date

8 March 2001 (08.03.2001)

PCT

(10) International publication number

WO 01/15799 A1

(51) International patent classification<sup>7</sup>:  
A61K 9/50

B01J 13/08,

(74) Representatives: MARTIN, Jean-Jacques etc.;  
Cabinet Regimbeau, 26, avenue Kléber, F-75116 Paris  
(FR).

(21) International application number: PCT/FR00/02376

(22) International filing date: 25 August 2000 (25.08.2000)

(25) Language of filing: French

(26) Language of publication: French

(30) Data relating to the priority:  
99/10,854 27 August 1999 (27.08.1999) FR(71) Applicant (for all designated States except US): MAINELAB  
[FR/FR]; 8, rue André Boquel, Parc Scientifique des Capucins,  
F-49100 Angers (FR).

(72) Inventors; and

(75) Inventors/Applicants (US only): BENOIT, Jean-Pierre  
[FR/FR]; 45, allée des Châtaigniers, F-49240 Avrille (FR).  
RICHARD, Joël [FR/FR]; La Modtais - Blou, F-49160  
Longue (FR). FOURNIER, Elvire [FR/FR]; 9, rue Jacques  
Granneau, F-49100 Angers (FR). LIU, Sonia [FR/FR]; 9,  
Grande Rue, F-02250 La Neuville Bosmont (FR).(81) Designated states (national): AE, AG, AL, AM, AT,  
AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,  
CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD,  
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG,  
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO,  
RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ,  
UA, UG, US, UZ, VN, YU, ZA, ZW.(84) Designated states (regional): ARIPO Patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW),  
Eurasian Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ,  
TM), European Patent (AT, BE, CH, CY, DE, DK, ES,  
FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI  
Patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML,  
MR, NE, SN, TD, TG).**Published:**

With the International Search Report.

For an explanation of the two-letter codes and the other  
abbreviations, reference is made to the explanations  
("Guidance Notes on Codes and Abbreviations") at the  
beginning of each regular edition of the PCT Gazette.

As printed

(54) Title: METHOD FOR ENCAPSULATING ACTIVE SUBSTANCES BY COACERVATION OF POLYMERS IN  
NON-CHLORINATED ORGANIC SOLVENT(54) Titre: PROCEDE D'ENCAPSULATION DE MATIERES ACTIVES PAR COACERVATION DE POLYMERES EN SOL-  
VANT ORGANIQUE NON-CHLORE

(57) Abstract: The invention concerns a method for microencapsulation of an active principle by coacervation which consists in controlled desolvation or coacervation of a polymer dissolved in an organic solvent containing said active principle, said coacervation being induced by adding a non-solvent causing the polymer to be deposited at the surface of the active principle, and by hardening the polymer deposit by adding a hardening agent, said hardening being leading to the formation of a continuous film coating the active principle. The invention is characterised in that the solvent is selected among ethyl acetate, N-methylpyrrolidone, methylethylacetone and acetic acid. The non-solvent is advantageously an alcohol comprising two to five carbon atoms and the hardening agent being for instance selected among water, alcohols comprising four carbon atoms and mixtures thereof.

(57) Abrégé: La présente invention concerne un procédé de microencapsulation d'un principe actif par coacervation qui consiste en la désolvatation ménagée ou coacervation d'un polymère dissous dans un solvant organique contenant ledit principe actif, ladite coacervation étant induite par addition d'un non-solvant et se traduisant par le dépôt du polymère à la surface du principe actif, et en le durcissement du dépôt de polymère par ajout d'un agent durcisseur, ledit durcissement se traduisant par la formation d'un film continu enrobant le principe actif, caractérisé en ce que le solvant est choisi parmi l'acétate d'éthyle, la N-méthylpyrrolidone, la méthyléthylcétone et l'acide acétique. Le non-solvant est avantageusement un alcool comprenant deux à 5 atomes de carbone et l'agent durcisseur est par exemple choisi parmi l'eau, les alcools comprenant un à 4 atomes de carbone et leurs mélanges.

WO 01/15799 A1